Mark Scheme

Summer 2021

Pearson Edexcel IAL in
Geography (WGE02 01)
Unit 2: Geographical Investigations

Results

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1(a)(i)	**AO2 (2 marks)** **A** = notch, cave, arch (1) **B** = beach, pebble beach, wave cut platform, debris (1)	**2**

Question Number	Answer	Mark
1(a)(ii)	**AO1 (2 marks)** Award **1** mark for explaining a way and a further expansion mark, up to a maximum of **2** marks. • Waves have a weak swash and strong backwash (1) which transports sediment out to sea creating a steep profile (1). • Destructive waves have a high wave height and short wavelength which creates powerful and strong waves (1) which means that sediment is eroded, causing a steep beach profile (1). Credit other valid explanations.	**2**

Question Number	Indicative content
1(b)	**AO1 (6 marks) / AO2 (2 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Primary / plant succession can happen when bare sand or mud is colonised by plants. • Plants and ecosystems provide an energy buffer and help to dissipate wave energy • Plants help stabilise ground / soil • Coastal dunes help prevent wave overtopping and tidal inundation during storm events or hazards (tsunami)

	• The presence of vegetation in coastal areas improves slope stability, consolidates sediment and reduces wave energy moving onshore • Coastal ecosystems provide a buffer against wind erosion • Ecosystems are one part of the wider coastal system which includes sediment transfers and other parts of the coastal sediment cell. **AO2** • Other parts of the coastal system, such as sediment sources and transfers of sediment (longshore drift) also contribute to overall stability by maintaining the coastal sediment cell. • Importance of vegetation can depend on its type (height, density) and quality; it will also be affected by other factors such as local topography • The width of the vegetation buffer will be significant in its role as an energy dissipator and stabilise coastal areas. • Future sea-level rise and climate change may change coastal systems affecting their overall resilience. Could argue that in the longer term, this is the main threat to coastal stability. • Overall, it might be argued that lots of factors e.g. role of people, can either stabilise or destabilise coastal systems.	
Level	Mark	Descriptor
Level 0	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1) • Understanding addresses a narrow range of geographical ideas. (AO1) • Understanding of geographical ideas lacks detail. (AO1) • Applies knowledge and understanding to geographical information/ideas, with limited logical connections/relationships. (AO2)
Level 2	4–6	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas. (AO1) • Understanding of geographical ideas is not fully detailed and/or developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find some relevant connections/relationships. (AO2)
Level 3	7–8	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas. (AO1)

		• Understanding of the geographical ideas is detailed and fully developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find fully relevant connections/relationships. (AO2)

Question Number	Answer	Mark
2(a)(i)	**AO2 (2 marks)** Award **1** mark for each correct bus-stop: • 5 (1) • 3 (1)	**2**

Question Number	Answer	Mark
2(a)(ii)	**AO1 (2 marks)** Award **1** mark for explaining a reason and a further expansion mark, up to a maximum of **2** marks each. • Older, high density in the inner city (1) means that there is low environmental quality so lower life quality (1) • Vehicles at main road intersections / industrial zones (1) will lower air quality and negatively affect health (1) • Modern, low density housing with gardens and greenspace (1) results in better air quality / greater opportunities for recreation so better health outcomes (1). Credit other valid reasons.	**2**

Question Number	Indicative content
2(b)	**AO1 (6 marks) / AO2 (2 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Urban regeneration is the social, environmental and economic improvement of areas that were previously run down • Urban regeneration and improvement is linked to a variety of change processes at different scales • Urban regeneration can have a range of different design briefs / catalysts including sporting events, expos, architecture and tourism • Some regeneration projects are often used as a catalyst for additional development and improvement. • Other smaller-scale regeneration projects are typically bottom-up, community driven with lower budgets and overheads • Sustainable regeneration includes social, economic, political as well as environmental considerations, but there is much overlap between the ideas so often they cannot be considered as discrete. **AO2** • Success can be complex to define. Criteria could include economic (jobs, new businesses, inward investment), social (housing, health, education, community engagement) and environmental (greenspace, air quality). Might be difficult to pin success on regeneration compared to other changes taking place in an area. • Smaller-scale regeneration projects focus on improving communities (housing, education and skills, employment opportunities) and increasing local representation. Such projects with more of a social focus are often significant tools in urban improvement. They may be more successful in some instances. • Some larger projects are often focused around economic improvements, rather than environmental or social returns since some schemes are privately funded and shareholders want a return. • Smaller scale can give better ROI (return on investment) compared to large scale, but it depends on the location and nature of investment

	• Regeneration may not benefit all individuals and groups within and area (challenge of "gentrification"), so evaluation can be difficult depending on attitudes of stakeholders and individuals. **Note:** contrasts can be in terms of scale, aims, function, finance and the different players involved in and leading the regeneration process.	
Level	Mark	Descriptor
Level 0	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1) • Understanding addresses a narrow range of geographical ideas. (AO1) • Understanding of geographical ideas lacks detail. (AO1) • Applies knowledge and understanding to geographical information/ideas, with limited logical connections/relationships. (AO2)
Level 2	4–6	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas. (AO1) • Understanding of geographical ideas is not fully detailed and/or developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find some relevant connections/relationships. (AO2)
Level 3	7–8	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas. (AO1) • Understanding of the geographical ideas is detailed and fully developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find fully relevant connections/relationships. (AO2)

Question Number	Answer	Mark
3(a)	**AO3 (4 marks)** ***NB:*** *the aim / question / hypothesis provides a context for the investigation and the subsequent parts that follow – no credit for this.* Award **1** mark for explaining why a location was chosen / selected and further marks for explanation (may be linked to another idea as to why it was appropriate), up to a maximum of **4** marks. The context will vary depending on the fieldwork areas chosen. • A local coastal area offered a range of different coastal ecosystems (1). This was a manageable scale (1) and therefore the fieldwork could be repeated in order to consider reliability (1). The area was also safe for working in groups (1). • The urban environment had already been researched documenting change and rebranding (1) meaning that we could compare our results to those of other people (1). The rebranding was concentrated in small areas making it accessible (1) and as we had past data, we could effectively measure success (1) • The sand dune location has a well-established model that could be tested (1) so we could collect data to accept or reject the assumption (1). It was also a relatively safe environment to work in (1) and we were able to manage potential risks to a minimum (1). **For this series only, accept reference to virtual fieldwork and previously completed fieldwork.**	**4**

Question Number	Answer	Mark
3(b)	**AO3 (2 marks)** Award **1** mark for explaining the secondary data and a further mark for explaining how it was linked to the investigation, up to a maximum of **2** marks. Nature of secondary data utilised will vary depending on the location as well as the context of the investigation.	**2**

	• (Used the internet) to research the population of the area (1) which allowed us find out about the contrasting characteristics of the people who live in the area (1) • (A local newspaper) helped us find out opinions about a new regeneration project (1) which allowed us to develop a pilot questionnaire survey (1) • (A historical map of the coast) was found on an internet archive site and allowed us to see the former position of the coastline (1). This helped us analyse coastal recession and coastal erosion risk over the last 100 years (1) • (GIS) was used to generate a large-scale city map, used to locate possible sites (1) and this helped determine the sampling strategy allowing for reliable data collection and subsequent analysis (1) • (ArcGIS Online) was used to determine the travel times in a city. (1) This helped us analyse how congestion changes at different times of the day. (1) • (Social Media) was used to gather a range of different opinions (1) which helped us judge the success of urban regeneration (1). Credit other valid sources and explanations. **For this series only, accept reference to virtual fieldwork and previously completed fieldwork.**	

Question number	Answer
3(c)	**AO3 (6 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** Content depends on students' choice of investigation question. Presentation include the following ideas: • Use of charts and graphs to show temporal and spatial differences • Use a large-scale map to present data, e.g. pedestrian flows and changes over time • Use of diagrams and tables to show complex patterns or relationship • Using ICT / Excel to plot data e.g. a scattergraph to show a relationship. • Using GIS to represent findings (geo-located).

	• Photographs or field sketches (including annotated) to represent places. • Written-up field notes / tabulated / colour coded. Nature of responses will be dependent on the context of the fieldwork and the environment in which it was undertaken. However, examiners should reward for detailed clear and specific data and information which are supported with depth and detail in terms of factual accuracy and realism. **For this series only, accept reference to virtual fieldwork and previously completed fieldwork**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–2**	• Limited understanding of the relationships between geographical questions and the background information, geographical context and research question (AO3) • Uses a limited range of fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Limited evidence of an ability to draw conclusions and the evaluation is simplistic, limited to one stage in the route to enquiry. (A03)
Level 2	**3–4**	• Some understanding of the relationship between the background information, geographical context and research question (AO3) • Uses some fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Some evidence of an ability to draw conclusions and the evaluation is relevant but restricted to one or two stages in the route to enquiry. (A03)
Level 3	**5–6**	• A full understanding of the relationship between the background information, geographical context and research question (AO3) • Evaluates fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Clear evidence of an ability to draw conclusions and the evaluation is full, across a number of stages in the route to enquiry. (A03)

Question number	Answer
3(d)	**AO3 (12 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** Content depends on students' choice of research question. Sampling design, and data collection techniques should include some the following: • Design of sampling: number of sites, spacing, sample sizes, sampling method – linked to specific methods of data collection • Data collection techniques: these will depend on specific methods chosen but can include evaluation of the equipment used, operator error; success of recording sheets / tallies • Inaccessibility of sites / lack of ability collect data due to time of day, seasons, or unanticipated hazards such as bad weather • Ethical and socio-political implications could be considered e.g. appropriateness of questionnaire questions. This impacts on both the range and quality of data and in turn has effects upon the accuracy of the results and the validity of conclusions May make reference to: o Appropriate data analysis and whether the data collected could be easily collated and analysed or was generated in a form that made this stage problematic. o Conclusions could be referred to if data collection yielded unusual / unexpected / anomalous results which affected the reliability / validity of conclusions. **For this series only, accept reference to virtual fieldwork and previously completed fieldwork**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–4**	• Limited understanding of the relationships between geographical questions and the background information, geographical context and research question (AO3) • Uses a limited range of fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Limited interpretation, analysis based on the data / information collected. (AO3) • Limited evidence of an ability to draw conclusions and the evaluation is simplistic, limited to one stage in the route to enquiry. (A03)
Level 2	**5–8**	• Some understanding of the relationship between the background information, geographical context and research question (AO3) • Uses some fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Interpretation and analysis based on the data / information collected form part of the response (AO3) • Some evidence of an ability to draw conclusions and the evaluation is relevant but restricted to one or two stages in the route to enquiry. (A03)
Level 3	**9–12**	• A full understanding of the relationship between the background information, geographical context and research question (AO3) • Evaluates fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Critically considers the role of interpretation, analysis based on the data / information collected. (AO3) • Clear evidence of an ability to draw conclusions and the evaluation is full, across a number of stages in the route to enquiry. (A03)

Question Number	Answer	Mark
4(a)(i)	**AO3 (2 marks)** Award **1** mark per relevant piece of information from Figure 3a and a further development mark of how this can help plan the fieldwork. Maximum **4** marks.	**4**

	• 3a allows the student to see different dune environments across the sand dune (1) so help with determining a suitable sample locations (1). • 3a might allow the sampling design (1) to be linked to the slope, height or distance from the ocean (1). • 3a allows you to see size and scale (1) – so what is achievable in terms of data collection in a given amount of time (1). • 3a may allow the student to identify possible hazards (1) and therefore to develop an appropriate risk management strategy (1) Accept other valid ideas linked to the Figure.	

Question Number	Indicative content	Mark
4(a)(ii)	**AO3 (2 marks)** Award **1** mark for explaining an advantage and a further expansion mark up to a maximum of **2** marks. • Allows you to create a spatial distribution of your data (1) so that it allows comparisons between sites and areas (1). • GIS might be used to help collect fieldwork data, e.g. using an app (1) which geo-locates information and photographs to a particular place (1). • GIS can be used to analyse primary fieldwork data (1) by using a special tool / technique, e.g. to group / count data (1). • It's convenient to collect GIS information directly using a tablet / phone (1) so it saves time duplicating maps onto paper which are easily damaged (1). Credit other valid ideas.	**2**

Question Number	Answer	Mark
4(b)(i)	**AO3 (2 marks)** Showing ranked numbers / a rank order (1) Median = 16.5 (1) Must show working out to get two marks. Don't accept 16 or 17.	**2**

Question Number	Answer	Mark
4(b)(ii)	**AO3 (2 marks)** Award **1** mark for the reason and a further expansion mark up to a maximum of 2 marks. • There is very little explanation about what the descriptors mean / or how they can be applied e.g. "Visual impact" (1) so it makes the scoring very subjective (1). • Students would not be able to quantify some descriptors, e.g. "life expectancy" (1) as they are about the future and or the past construction impacts (1). • No idea as to how the weightings have been calculated / applied (e.g. maximum scores) (1) which means that you cannot draw firm conclusions (1) • Descriptors may not be relevant (1) and there may other topics may not have been covered by a descriptor (1). Accept other ideas, based on information in the recording sheet. Don't credit ideas to do with sampling, i.e. when observations were carried out.	**2**

Question Number	Answer	Mark
4(c)	**AO3 (2 marks)** Award **1** mark for the reason and a further expansion mark up to a maximum of 2 marks. • There is very little sustainable management as area is dominated by hard defences (rocks / rip-rap) in the foreground (1) and there would have been lots of concrete / transportation used in its construction (1). • Lots of development has taken place at the coast with rip-rap in the front of the image (1) suggesting that sustainable development has not been a priority (1). • Low lying with buildings next to the sea in the background (1) means that they will be susceptible to sea level rise and climate change (1) • Rip-rap may be damaged in storms (1) and there is an economic and environmental cost to replacement (1) • There is no evidence of natural coastal landforms and / or ecosystems (1) suggesting natural systems have been replaced by urban and coastal development (1). Accept other ideas, based on information in the photograph.	**2**

Question Number	Answer	Mark

5(a)(i)	**AO3 (4 marks)** Award **1** mark per relevant piece of information from Figure 4a and a further development mark of how this can help plan the investigation. Maximum **4** marks per resource. • 4a allows the student to see temporal differences in the traffic flows (1) so help with determining appropriate sampling times during a day (1) • 4a might allow the sample design to be linked to the different seasons (1) so help with determining appropriate sampling times during a day (1) • 4a allows the student see differences between weekends vs weekdays (1) so help with determining appropriate sampling times during a day (1) • 4a allows the student to see the high levels of traffic flow (1) and therefore how difficult it might be to count the vehicles (1). • 4a allows the student to identify points where the data changes e.g. 6-9 on a weekday (1) therefore adjust the sampling times according to the change to avoid missing out data (1). Accept other valid ideas linked to the Figure.	**4**

Question Number	Indicative content	Mark
5(a)(ii)	**AO3 (2 marks)** Award **1** mark for explaining an advantage and a further expansion mark up to a maximum of **2** marks. • Allows you to create a spatial distribution of your data (1) so that it allows comparisons between sites and areas (1). • GIS might be used to help collect fieldwork data, e.g. using an app (1) which geo-locates information and photographs to a particular place (1). • GIS can be used to analyse primary fieldwork data (1) by using a special tool / technique, e.g. to group / count data (1). • It's convenient to collect GIS information directly using a tablet / phone (1) so it saves time duplicating maps onto paper which are easily damaged (1). Credit other valid ideas.	**2**

Question Number	Answer	Mark

5(b)(i)	**AO3 (1 mark)** Showing ranked numbers / a rank order (1) Median = 16.5 (1) Must show working out to get two marks. Don't accept 16 or 17.	**2**

Question Number	Answer	Mark
5(b)(ii)	**AO3 (2 marks)** Award **1** mark for the reason and a further expansion mark up to a maximum of 2 marks. • There is very little explanation about what the descriptors mean / or how they can be applied e.g. "Service reliability" (1) so it makes the scoring very subjective (1). • Students would not be able to quantify some descriptors, e.g. "safety for passengers" (1) as there are a number of elements that make up this aspect, e.g. speed, standing vs sitting (1). • No idea as to how the weightings have been calculated / applied (e.g. maximum scores) (1) which means that you cannot draw firm conclusions (1) • Descriptors may not be relevant (1) and there may other topics may not have been covered by a descriptor (1). Accept other ideas, based on information in the resource.	**2**

Question Number	Answer	Mark
5(c)	**AO3 (2 marks)** Award **1** mark for the using evidence from the photograph and a further expansion mark up to a maximum of 2 marks. • There is lots of roads (1) therefore lots of traffic and air quality issues (1) • Evidence of Lots of concrete used in construction (1) which has a high environmental footprint (1) • Parcels of development separated by major roads (1) makes access for pedestrians very hard, leading to over-reliance on the car (1). • The area seems very dry (little green vegetation (1) therefore water supply might be an issue (1)	**2**

	• The area looks hot and arid (1) so there would be a lot of electricity used in air conditioning (1) • Numerous tall buildings and canyons (1) could create unwelcome urban microclimate impacts e.g. high winds and constant shading (1). Accept other ideas, based on information in the photograph.	

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